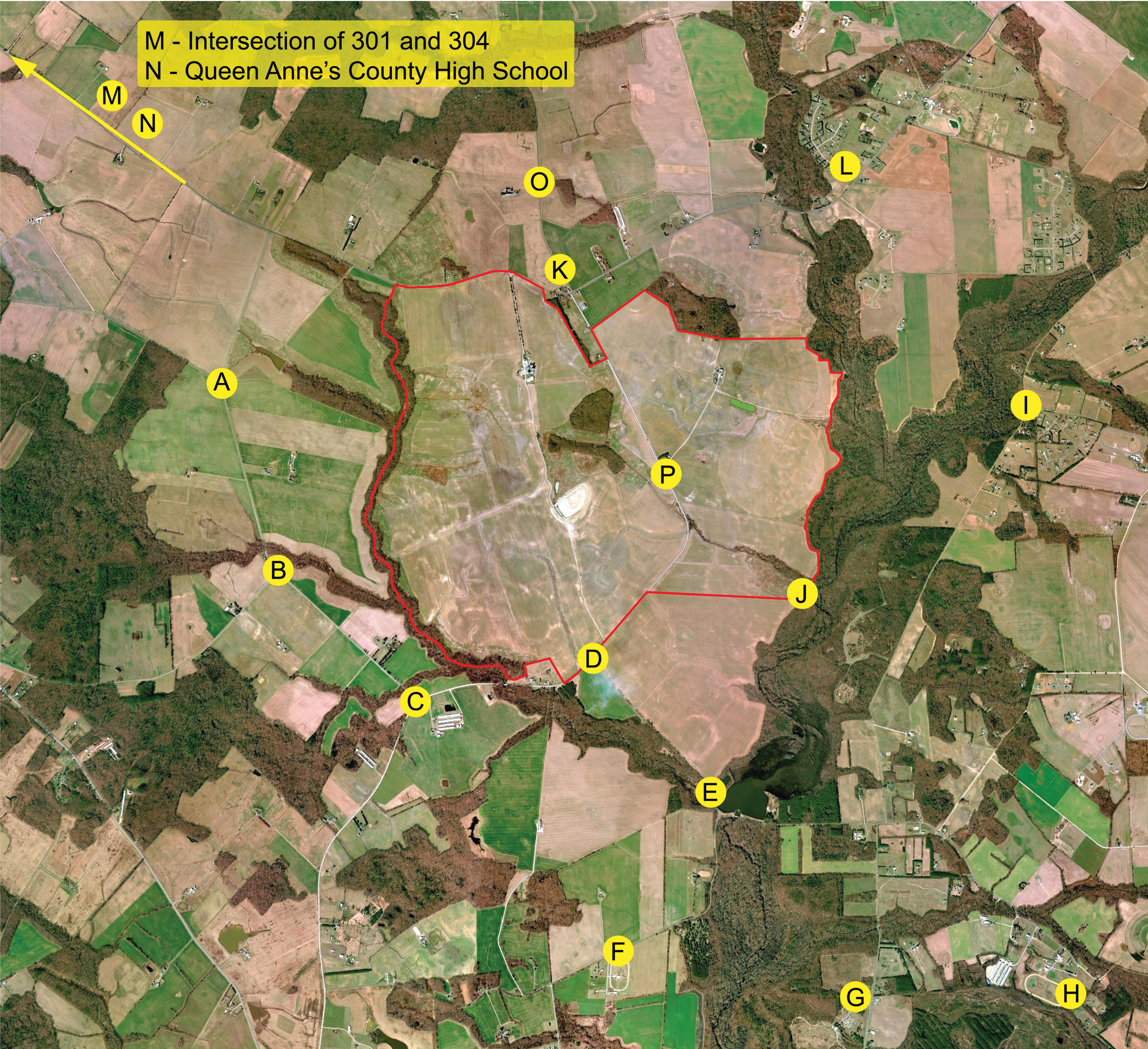


FOREIGN AFFAIRS SECURITY TRAINING CENTER [FASTC]

An American Recovery and Reinvestment Act of 2009 Project



PRELIMINARY SITE NOISE LEVELS



FOREIGN AFFAIRS SECURITY TRAINING CENTER

[FASTC]

An American Recovery and Reinvestment Act of 2009 Project

PRELIMINARY SITE NOISE LEVELS



LOCATION	ESTIMATED SOUND PRESSURE LEVELS, dBA (DRAFT)															
	A	B	C	D	E	F	G	H	I	J	K	L	M (Intersection of 301 & 304)	N (Queen Anne's County High School)	O	P
Ambient with distant traffic	38 - 49	37 - 49	40 - 50	40 - 50	35 - 41	40 - 48	37 - 43	34 - 44	33 - 46	32 - 40	44 - 52	45 - 57	64 - 69	47 - 53	38 - 45	40 - 50
Ambient with nearby traffic or other events	Truck - 85	SUV - 80	Cars 150 feet away on 481 - 65	Cars 150 feet away on 481 - 70	Cars - 65	Small Aircraft - 65	Cars - 60	Cars - 70	Gunshots - 80	Geese - 52, Trucks - 65, Gunshots - 70	Truck - 80	Cars - 76	Trucks - 80	Cars - 75	Cars - 60	Cars - 70
Cars on All Tracks	46-51	52-57	56-61	57-62	43-48	42-47	34-39	33-38	38-42	49-54	48-53	37-42	29-34	26-31	43-48	52-57
Cars on All Tracks with Berms	43-48	50-55	53-58	55-60	41-46	39-44	31-36	31-36	37-42	47-52	46-51	36-41	26-31	22-27	21-26	51-56
Cars on All Tracks with Berms, Flashbangs & Artillery Simulator	81-91	86-96	89-99	94-104	79-89	77-87	66-76	65-75	70-80	83-93	88-98	72-82	61-71	55-65	81-91	86-96
One Weapon in Each Range	69-74	67-72	64-69	64-69	55-60	53-58	46-51	45-50	53-58	60-65	72-77	57-62	48-53	40-45	68-73	65-70
One Weapon in Each Range with Full Baffles and Mitigation	64-69	64-69	62-67	61-66	54-59	52-57	45-50	44-49	51-56	58-63	69-74	55-60	46-51	40-45	66-71	62-67
30 Weapons in Each Range	83-88	81-86	78-83	78-83	69-74	68-73	60-65	59-64	67-72	74-79	86-91	71-76	63-68	55-60	82-87	79-84
30 Weapons in Each Range with Full Baffles and Mitigation	78-83	79-84	77-83	76-81	68-73	66-71	60-65	59-64	66-71	73-78	84-89	70-75	61-66	55-60	80-85	77-83
0.5 lb Charge - Pad Depressed 5 feet	72-82	77-87	81-91	91-101	78-88	73-83	65-75	65-75	72-82	88-98	80-90	72-82	53-63	51-61	75-85	93-103
0.5 lb Charge - Pad Depressed 5 feet with mitigation	72-82	77-87	81-91	90-100	78-88	73-83	65-75	65-75	72-82	88-98	80-90	72-82	53-63	51-61	75-85	86-96
1.5 lb Charge - Pad Depressed 5 feet	79-89	84-94	88-98	98-108	85-95	80-90	72-82	72-82	79-89	95-105	87-97	78-88	62-72	55-65	82-92	100-110
1.5 lb Charge - Pad Depressed 5 feet with mitigation	79-89	84-94	88-98	97-107	85-95	80-90	72-82	72-82	79-89	95-105	87-97	78-88	62-72	55-65	82-92	93-103
3 lb Charge - Pad Depressed 5 feet	93-103	98-108	102-112	112-122	98-108	94-104	86-96	86-96	93-103	109-119	101-111	93-103	76-86	69-79	96-106	114-124
3 lb Charge - Pad Depressed 5 feet with mitigation	93-103	98-108	102-112	111-121	98-108	94-104	86-96	86-96	93-103	109-119	101-111	93-103	76-86	69-79	96-106	107-117

1. All estimates of noise are preliminary based on Program information available.
2. Mitigation estimates are based on Build Alternatives and are not yet optimized. Some mitigations are barrier walls, some are baffles and some are vegetation. The mitigation options will be reviewed as the study continues to determine which approach is most suitable.
3. Audibility is difficult to determine and depends on frequency of sound, impulsive nature of sound and other factors.
4. Impulse Noise is often considered to “sound” up to 8 dB louder than the dB level would suggest, meaning that 100 dB impulse ‘sounds-like’ 108 dB of continuous noise.
5. Different weapons all have different noise patterns in terms of directionality, noise dispersion and discharge noise level. Peak sound pressure will be greater than these values, which are estimated as maximum measured levels based on a fast setting on a sound level meter.
6. Upper and Lower ranges in noise levels for estimated levels should be considered estimates only and may vary for the final installed conditions based on program, training, design and construction.
7. All values are dB(A) values, both measured and estimated which represents the spectrum of noise as heard by humans.
8. Weather conditions (hot vs. cold, dry vs. humid) may generate a swing in noise levels of +/- 5 dB from the estimates above which are based on standard conditions.
9. Sound Propagation calculations are based on Standards. Other conditions such as wind, air pressure, cloud cover, rain and temperature gradients may all have an impact on the propagation of sound and hence the final levels.
10. Charge noise levels are Lmax levels and represent the 'fast' measured sound pressure . The instantaneous sound pressure peak for charges only occur for a fraction of a secon, Lpeak is the peak pressure and may be 10-30 dB higher than the values noted above.

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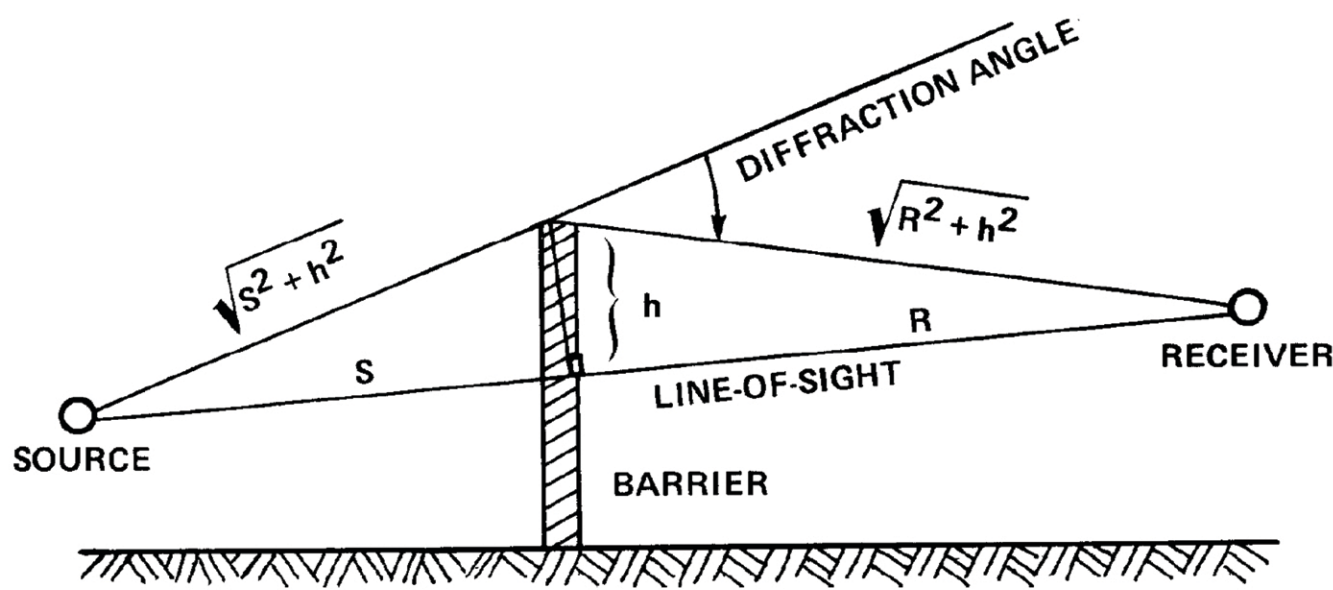
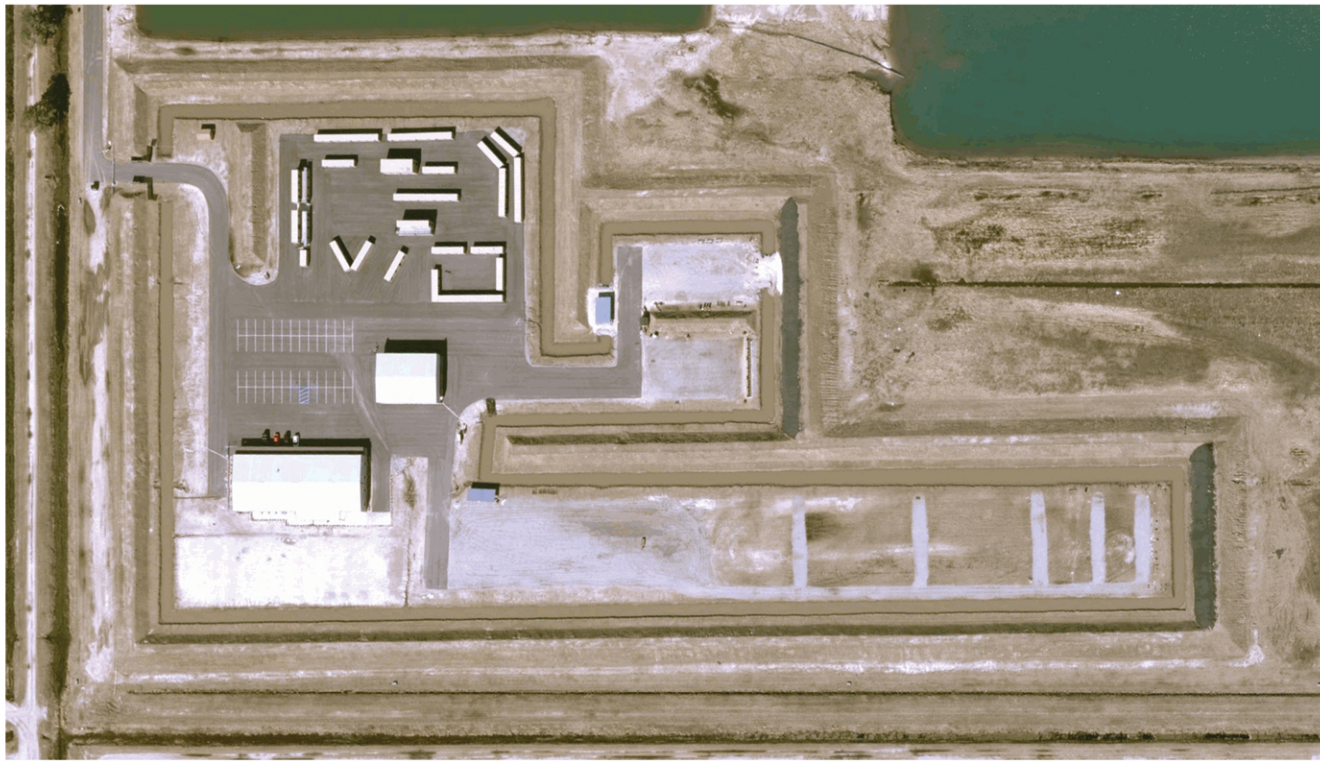
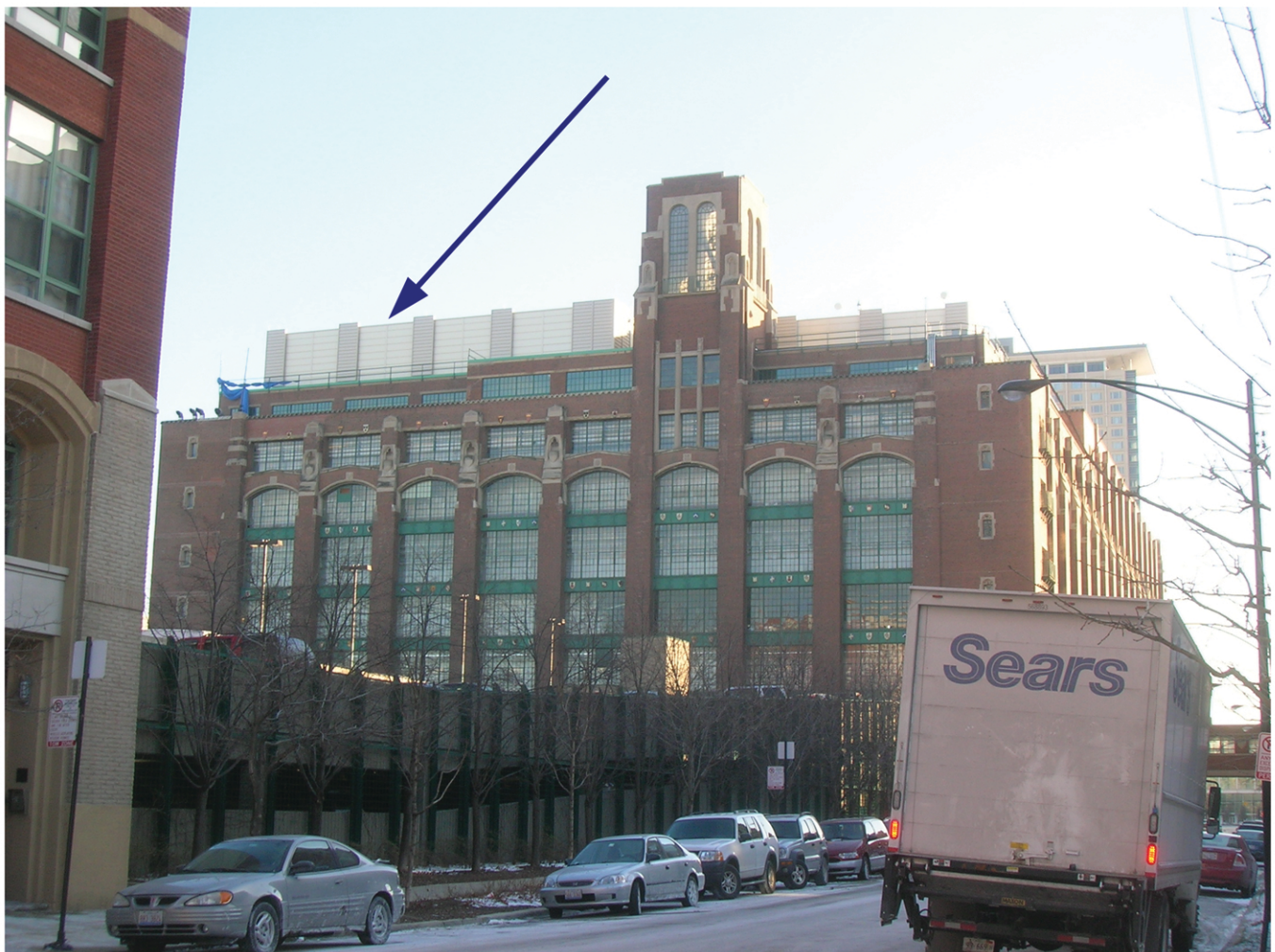
COMPARABLE NOISE LEVELS

COMMON COMPARABLE NOISE LEVELS	
EVENT	NOISE LEVEL, dBA
Silence	10
Normal Breathing	
Whispering at 5 feet	20
Soft Whisper	30
Quiet Residential Area	
Public Library	40
Refrigerator	
Wind in the trees	50
Background Noise in an Office	
Air Conditioner	
Washing Machine	50 - 75
Electric Shaver	
Dishwasher	
Residential Air Conditioning System	55 - 70
Normal Conversation	
Light Car Traffic (at 50 ft)	
Commercial Areas	60
Residences Close to Industry	
Birds at 10 feet	
Insect Noise - Cicadas	
Alarm Clock	
Vacuum Cleaner	
Car at 20 Feet	65 - 80
Large Dog Barking at 50 Feet	
Train Horn at 1000 Feet	
Highway Traffic at 50 Feet	
Coffee Grinder	70 - 95
Predominantly Industrial Area	
Aircraft Cabin In Flight	
Flush Toilet	75 - 85
Busy Classroom	
Ringing Telephone	
Pop-Up Toaster	80
Blender	
Lawnmower at 20 Feet	
Busy City Street	80 - 90
Loud Shouting	
Commercial Kitchen	
Garbage Disposal Diesel Truck at 50 Feet	
Snow-Machine at 50 Feet	80 - 95
Freight Train at 100 Feet	
Powerdrill	
Shop Tools	
Food Blender	90
Boiler Room	
Helicopter at 500 Feet	
Train Horn at 100 Feet	
Hammering a Nail	95
New York Subway Train at 200 Feet	
Jet Takeoff at 1500 Feet	
Power Mower at 5 Feet	
Nail Gun	100
Home Theater Speakers at 5 Feet	
Outboard Motor at 5 Feet	
Crowd Noise at Football Game	
Baby Crying / Shouting In Ear	
Accelerating Motorcycle at 20 Feet	
Shotgun at 30 Feet	
Jackhammer at 20 Feet	
Car Horn at 3 Feet	
Balloon Popping at 10 Feet	
Hilti Construction Gun	
Car Backfire at 50 Feet	
Train Horn at 20 Feet	
Public Fireworks Display at 500 Feet	
Chainsaw	
Pneumatic Drill	
Steel Mill	
Cut Off Saw	110
Emergency Siren	
Thunder Nearby	
Threshold of Pain	
Jackhammer at 5 Feet	
Shotgun at 10 Feet	
Loud Rock Concert	
Pneumatic Riveter at 4 Feet	120
Loud Rock Concert 50 Feet from Speakers	130
Airplane Taking Off	
Shotgun at shooter	140
Aircraft Carrier Deck During Take Off	
Military Jet Engine at Take Off at 50 Feet	150

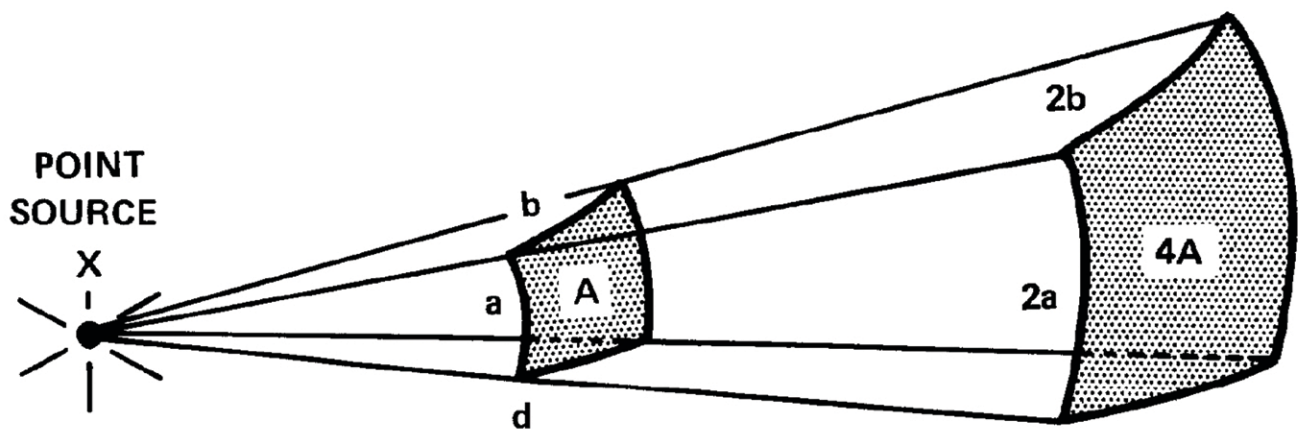
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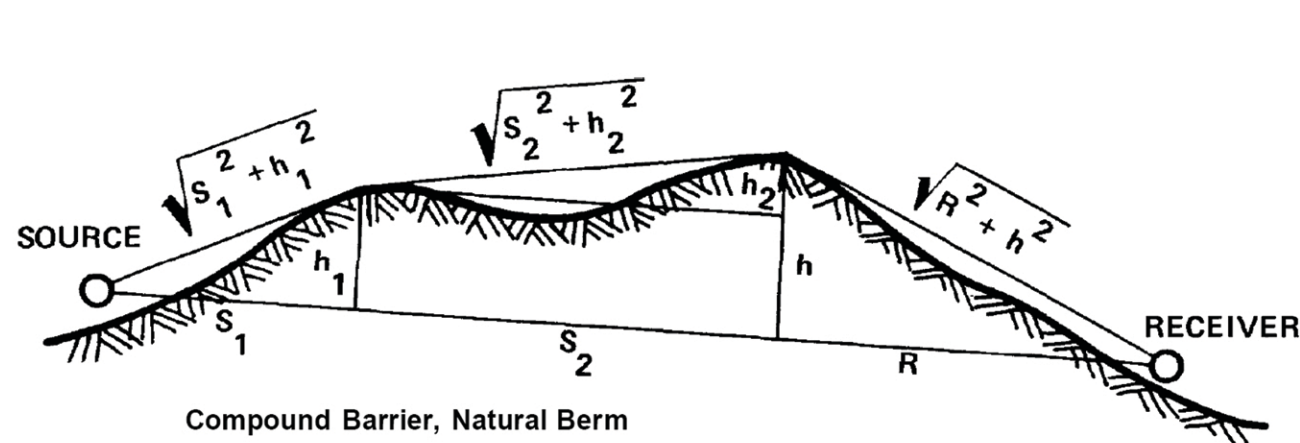
NOISE REDUCTION METHODS



Parameters and Geometry of Outdoor Sound Barrier



Inverse Square Law of Sound Propagation.

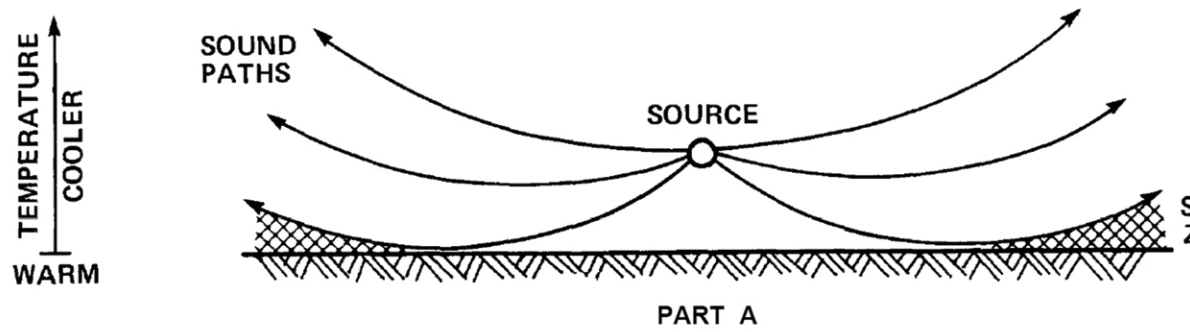


Compound Barriers

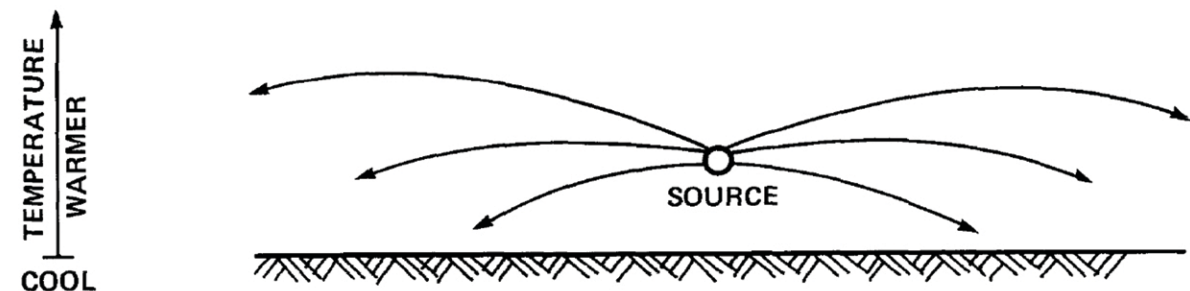


Potential Operational Noise Mitigation

- Public Notifications
 - Signposts
 - Radio Announcements
 - Television Announcements
 - Newspaper Announcements
 - Email Notifications
 - Public Website
- Regularly Scheduled Times
- Daytime Hours Only

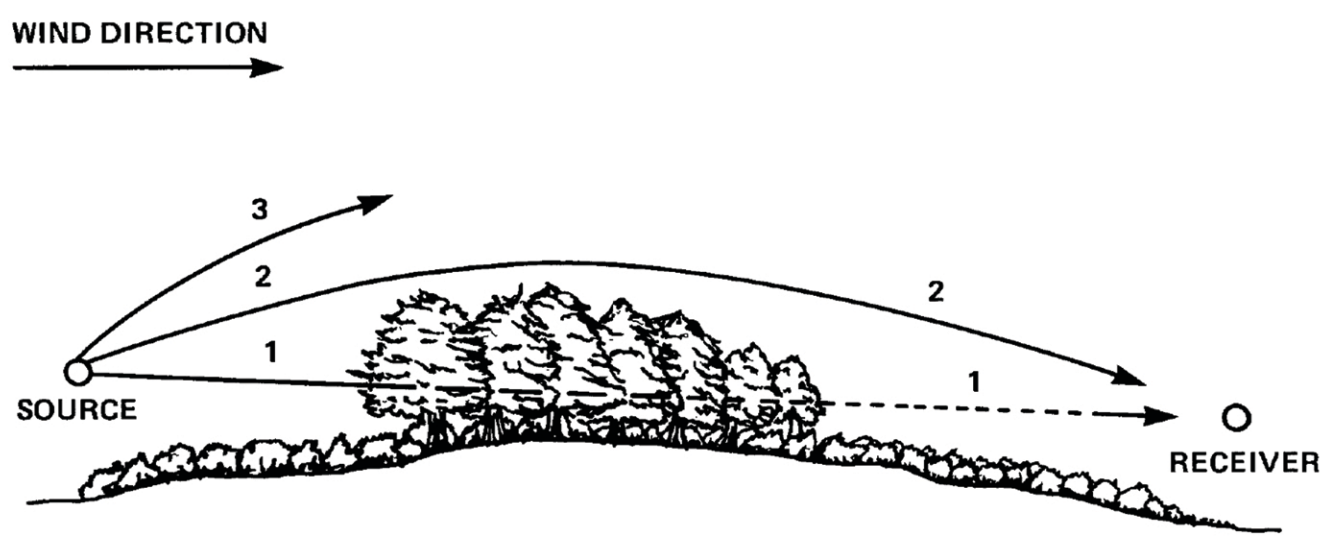


PART A

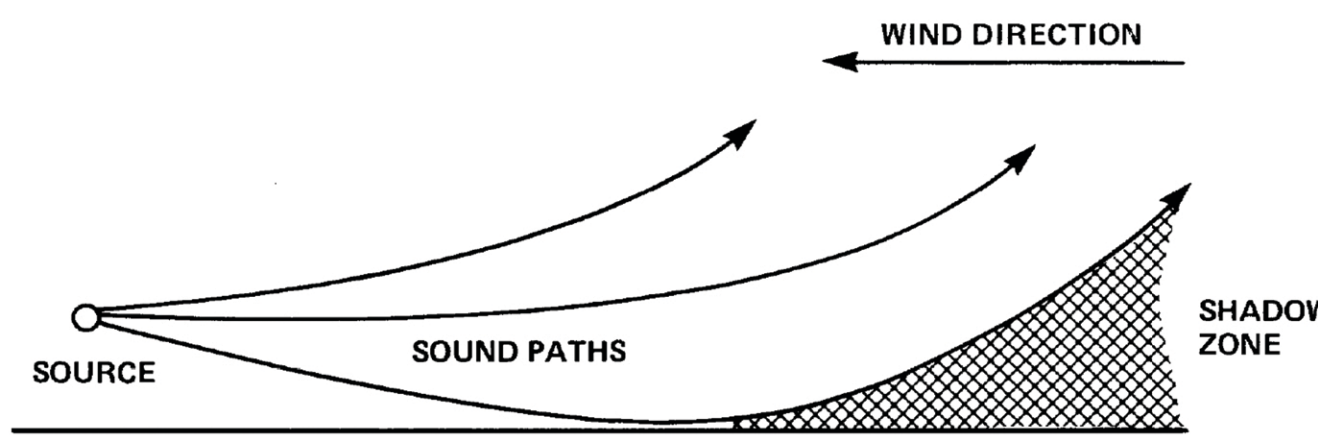


PART B

Effects of Temperature Gradients on Sound Propagation.



Downwind Sound Diffraction.



Upwind Sound Diffraction.

